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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/697,620	10/29/2003	Manoj Singhal	15154US01	7311

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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/697,620	SINGHAL, MANOJ	
	Examiner	Art Unit	
	Danelle E. Jones	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2 and 5-8, 12-13, 15-19, 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. US 6,901,362 in view of Boland US 7,171,357.

Regarding **claim 1 and claim 16**, Jiang et al. discloses a method for classifying an audio signal (see col. 1, lines 7-8), the method comprising:

receiving an audio signal to be classified (see fig. 1, where audio signal 106 is input in to audio analyzer 104 and col. 3, line 21)

dividing the audio signal at least into sub-bands compatible with speech and incompatible with speech (see col. 3, lines 34-39);

comparing the sub band energy to a threshold value (see col. 8, lines 57-67),

and classifying the audio signal based upon the comparison (see fig. 4 steps 246 and 252, and col. 3, line 22);

Jiang et al. fails to teach calculating a ratio of the sub-bands energies and using the ratio to compare to a threshold value. However, these features are well known in the art as evidenced by Boland, which discloses a voice activity detector that uses energy ratios (see col. 1, lines 49-52). It would have been obvious to one of ordinary skill in the

art at the time the invention was made to use Boland voice activity detection method of using sub-band ratios because it can distinguish between speech and non speech sounds better than using just sub-band energy (see col. 1, lines 52-55).

Regarding **claim 2**, the limitations of claim 1 have been met as discussed above. Jiang et al. further discloses performing a Fourier Transform on the audio signal to transform the signal from time to frequency (see col. 5, lines 65-66).

Regarding **claim 5 and claim 21**, the limitations of claim 1 have been met as discussed above. Jiang et al. further discloses wherein classifying the audio signal based upon the comparison the ratio to the threshold value further comprises, if the ratio is less than the threshold value, then the audio signal is classified as speech (see col. 8, lines 57-67).

Regarding **claim 6 and claim 22,** the limitations of claim 1 have been met as discussed above. Jiang et al. further discloses wherein classifying the audio signal based upon the comparison of the ratio to the threshold value further comprises, if the ratio is greater than the threshold value, then the audio signal is classified as music (see co. 12, Table 1).

Regarding **claim 7,** the limitations of claim 1 have been met as discussed above. Jiang et al. further discloses wherein dividing the audio signal into sub-bands compatible with speech and incompatible with speech further comprises dividing the audio signal into a first frequency sub-band comprising frequencies below 4 KHz and a second frequency sub-band comprising frequencies above 4 KHz (see col. 8, lines 34-35).

Regarding **claim 8 and claim 23,** the limitations of claim 1have been met as discussed above. Jiang et al. further discloses wherein upon classifying the signal as one of speech and music, a classifying sub-band may be further divided and additional ratios calculated to provide more detailed information regarding an identity of a sound producer of the audio signal (see col. 13, lines 9-10).

Regarding **claim 12 and claim 18,** the method according to claim 1 and claim 16 have been met as discussed. Jiang et al. further discloses wherein the threshold value used in the comparison is pre-determined and pre-set by a user (see col. 4, lines 28-30).

Regarding **claim 13 and claim 19,** the method according to claim 1 and claim 16 have been met as discussed. Jiang et al. further discloses wherein the threshold value used in the comparison is determined through trial and error of a plurality of iterations in a comparing device (see col. 8, line 13-18).

Regarding **claim 15,** the limitations of claim 1 have been met as discussed above. Jiang et al. further discloses wherein the audio signal is one of an analog signal and a digital signal (see fig. 1, element 106, col. 3, lines 23-25).

Regarding **claim 17**, the limitations of claim 16 have been met as discussed above, Jiang et al. further discloses wherein the plurality of mathematical functions performed on the audio signal may comprise at least one of a Fourier Transform, squaring an amplitude, separating an audio spectrum into sub-bands, integrating the sub-bands, and calculating a ratio of integrated sub-bands (see fig. 3 element 222).

3. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. as applied to claims 1-2 above, and further in view of Yamada et al. US 6,993,484. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. US 6,901,362 in view of Boland US 7,171,357 as applied to claims 1-2 above, and further in view of Yamada et al. US 6,993,484.

Regarding **claim 3**, the limitations of claim 2 have been met as discussed above. Jiang et al. does not disclose squaring the amplitude of the transformed audio signal and associating energy with frequency. However this feature is well known in the art as evidenced by Yamada et al. who discloses squaring the amplitude of a signal. It would have been obvious to one of ordinary skill in the art at the time the invention was made to square the amplitude of an audio signal to the power value (see col. 1, lines 50-53), also known as energy distribution.

Regarding **claim 4**, the limitations of claim 1 have been met as discussed above. Jiang et al. does not disclose wherein calculating a ratio of the sub-bands further comprises integrating the sub-band compatible with speech, integrating the sub-band incompatible with speech, and calculating a ratio of the sub-bands energies. However this feature is well known in the art as evidenced by Yamada et al. who discloses squaring the amplitude of a signal. It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the square of the amplitude to obtain a value for power (see col.1, lines 50-53), also known as energy distribution.

4. Claims 9-11, 14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. US 6,901,362 in view of Boland US 7,171,357 applied to claim 1 above, and further in view of Manjunath et al. US 6,691,084.

Regarding **claim 9,** the method according to claim 1 has been met as discussed above. Jiang et al. does not disclose wherein classifying the audio signal occurs prior to encoding the audio signal. However, this feature is well known in the art as evidenced by Manjunath et al. which discloses a system that encodes a signal after classifying it (see fig. 1, steps 208 and 204, col. 1, lines 65-67). It would have been obvious to one of ordinary skill in the art to classify a signal and encode it based on the classification to be able to select the coding mode that achieves the lowest bit rate (see col. 1, lines 65-col. 2, line 12)

Regarding **claim 10**, the method according to claim 1 has been met as discussed above. Jiang et al. does not disclose wherein classifying the audio signal occurs after decoding the audio signal. However, this feature is well known in the art as evidenced by Manjunath et al. which discloses a system that encodes a signal after classifying it (see fig. 1, steps 208 and 204, col. 1, lines 65-67). It would have been obvious to one of ordinary skill in the art to classify a signal and encode it based on the classification to be able to select the coding mode that achieves the lowest bit rate (see col. 1, lines 65-col. 2, line 12)

Regarding **claim 11,** the method according to claim 1 has been met as discussed

above. Jiang et al. discloses converting the audio signal from an analog signal to a digital signal (see col. 5, lines 40-43), transmitting the audio signal (see fig. 1, where audio signal 106 is transmitted to audio analyzer 104), and processing the audio signal, wherein processing at least comprises one of storing the audio signal and playing the audio signal (see fig. 3, element 212, where the buffer is used for storage). Jiang et al. does not disclose encoding the audio signal; packetizing the audio signal and decoding the audio. However these features are well known in the art as evidenced by Manjunath et al. which discloses a system that encodes an audio signal, packs the encoded data signal (see fig. 3, element 312 and 314 and col. 6, lines 61-63) and decodes an audio signal (see fig. 1, steps 204 and 206, col. 1, lines 65-67) It would have been obvious to one of ordinary skill in the art at the time the invention was made to encode then decode an audio signal to minimize the number of bits transmitted (see col. 4, lines 6-11 and col.6, lines 61-63).

5. Claims 14 and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Jiang et al. US 6,901,362 in view of Boland US 7,171,357 as applied to claims 1 and 16 above, and further in view of Tackin US 7,180,892.

Regarding **claim 14 and claim 20,** the method according to claim 1 and claim 16 have been met as discussed above. Jiang et al. in view of Boland does not disclose wherein classifying the audio signal further comprises turning on a flag in a header of a packet of digital audio information, wherein the flag provides an indication of

classification of the audio signal based upon comparison of the ratio and the threshold value. However this feature is well known in the art as evidenced by Tackin. Tackin discloses a voice detection system that uses a header of a packet as an indicator (see col. 65, lines 25-26). It would have been obvious to one of ordinary skill in the art at the time the invention was made to indicate the classification of an audio signal in a header of a packet so that the transmission of the classification would be guaranteed (see col. 65, lines 30-31).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Danelle E. Jones whose telephone number is 571-270-1241. The examiner can normally be reached on M-F 7:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DD
4/5/07

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SUPERVISORY PATENT EXAMINER